

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2 and 10 claims the use of an anionic acid dye and subsequently lists a group of dyes, which appears to be a markush group. In fact, the prior art and applicant's specification suggests that each of the dyes listed in claims 2 and 10 are species, or examples, of possible anionic acid dyes that may be used. However, at the end of claims 2 and 10, the species are joined with the word "and", and thus is confusing as to whether applicant is claiming to use all the listed compounds as a mixture, or each individually, to form an anionic dye.

Attorney Robert Holthus has clarified that claims 2 and 10 are indeed a list of species (see Interview Summary attached). However, clarification within the claims is still needed.

3. Claims 5 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 5 and 13 recites the limitation " ϵ -caprolactam". There is insufficient antecedent basis for this limitation in the claim, as claim 1 does not mention how, where, or when the " ϵ -caprolactam" is used.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lacroix et al US 6511535 in view of Karlinski US 5940099.

Per claim 1, Lacroix teaches the method for printing textile fibre materials using an ink-jet printing process (see abstract). Lacroix further teaches the method comprising an aqueous ink with at least one anionic acid dye (col. 1, lines 30-40), dipropylene glycol (col. 23, lines 20-27), while also teaching the claimed viscosity range (col. 22, lines 55-62). Additionally, per claims 3 and 11, Lacroix teaches viscosity as a result-effective variable and thus, one of ordinary skill in the art would be able to optimize said variables to arrive at the claimed range via routine experimentation (see MPEP 2144.05).

Lacroix is silent regarding the claimed ink-jet print head and supply layer. However, Karlinski teaches an ink-jet print head with ink supply through a porous medium as claimed. Karlinski teaches an ink-jet print head comprising an ink supply layer receiving ink from an external ink reservoir (col. 3, lines 45-52),, said ink supply layer having a first and second side and comprising a porous medium having a plurality of pores therein and a plurality of holes extending therethrough (see Karlinski, claim 1). It would have been obvious to one of ordinary skill in the art to combine the deposition methods taught by Lacroix and Karlinski because Lacroix teaches a process using an ink-jet deposition process, while Karlinski teaches an drop on demand ink jet system which can deposit dye material in an improved process that has cured the deficiencies of the previous drop on demand ink jet systems (see col. 1 of Karlinski).

Per claims 2 and 10, Lacroix teaches many of the species listed in Applicant's claim 2 to be used as the anionic acid dye (see col. 1 to col. 6, and Lacroix claim 1). Per claims 4, 5, 12, and 13, Lacroix teaches using dipropylene glycol (col. 23, lines 20-27) and ϵ -caprolactam (col. 24, lines 10-30). Lacroix teaches that the weight composition of the components within the ink, based on the total weight of the ink, are result-effective variables, and therefore, one of ordinary skill in the art would be able to optimize said variables to arrive at the claimed range via routine experimentation (see MPEP 2144.05).

Per claim 6, Karlinski teaches the ink-jet print head comprising a nozzle layer defining a plurality of ejection nozzles (col. 2, lines 50-52), an ink supply layer formed from a porous material having a multitude of small interconnecting pores, with a plurality

of connecting holes from the rear surface to the front surface, each hole being aligned to connect between the ejection nozzles (col. 2, lines 50-55, and Karlinski, claim 1), and a deflection layer comprising a plurality of transducers related to the connecting holes (col. 2, lines 54-56). Per claim 7, since a pattern is desired to be formed through the process, one of ordinary skill would design the supply layer to have a pattern of ink distribution channels. Thus, it would also be obvious to have at least one hole passing through the layer to form the desired pattern (since this is the purpose of having the ink distribution channels).

Per claim 8, Karlinski teaches that the transducers are piezoelectric elements (col. 2, lines 60-63). Per claim 9, Lacroix teaches having nitrogen-containing or hydroxyl-group containing fibrous materials are printed (col. 24, lines 55-59). Per claim 14, Lacroix teaches natural or synthetic fibrous polyamide materials to be printed (col. 25, lines 20-27).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN LEONG whose telephone number is (571)270-5352. The examiner can normally be reached on Monday to Friday, 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN LEONG/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792